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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,445	12/27/2001	Takatoshi Kato	50395-128	1608

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EXAMINER

SONG, SARAH U

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 03/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,445

Applicant(s)

KATO ET AL.

Examiner

Sarah Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-7 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The prior art documents submitted by the applicant in the Information Disclosure Statements filed on March 13, 2002 and May 31, 2002 have all been considered and made of record (note the attached copy of form PTO-1449).

Claim Objections

3. Claims 1, 6 and 7 are objected to because of the following informalities: In claim 1, line 3, Examiner suggests insertion of -a—before “fusion”. In claims 6 and 7, Examiner suggests changing “becomes” in line 3 to -is—so that the structural limitations for the MFD at the fusion-spliced part are positively recited. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by O'Toole et al. (U.S. Patent 6,336,749). O'Toole et al. disclose a method of connecting a first optical fiber

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having a first MFD and a second optical fiber having a second MFD smaller than the first MFD by a fusion splicing method, comprising:

a step of heating a portion including an adjacent end face of the first optical fiber so as to diffuse a dopant; and

a step of connecting the first and the second optical fibers by fusion-splicing.

O'Toole et al. also discloses an optical transmission line including the first optical fiber and a second optical fiber fabricated by the process above. See claims 1 and 12 of O'Toole et al.

Regarding claims 4 and 5, it is additionally noted that the manner in which a device is made is not germane to the patentability of the device itself where the structural features of the device are otherwise disclosed.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Toole et al. O'Toole et al. disclose that both the first and second optical fibers have an enlarged MFD at the fusion-splice part (column 4, lines 18-20), but do not specifically disclose the magnitude of the enlargement. However, it would have been within the level of ordinary skill in the art to determine the minimum increase in the MFD to reduce the coupling loss at the splice region. Therefore, a MFD that is 1 μm larger at the fusion-splice part than the MFD at the other parts of the fibers would have been obvious since it has been held that where the general conditions of a

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claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. Claim 2 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over O'Toole et al. The method disclosed by O'Toole et al. also comprises a step of annealing (heating) a portion including the fusion-spliced part between the first and the second optical fibers so as to diffuse the dopant contained therein. See column 6, lines 6-23; column 7, lines 6-11; claim 12. Said step of annealing a portion including the fusion-spliced part occurs simultaneously with the step of heating a portion including an adjacent end face of the first optical fiber. In the alternative where the two steps of heating are not simultaneous, O'Toole et al. do not specifically disclose a step of heating a portion including an adjacent end face of the first optical fiber so as to diffuse a dopant, a subsequent step of connecting the first and second optical fibers by fusion-splicing, and an additional post-fusion heating step. That is, O'Toole et al. do not specifically disclose diffusion of the dopants prior to the annealing step. However, the fusion-splicing process is known to begin with a heating step. That heating during the fusion-splicing process of each of the fibers is known to result in diffusion of the dopants present within the fibers. Therefore, it would have been obvious to one of ordinary skill in the art that the fusion-splicing process of O'Toole et al. comprises a step of heating a portion including an adjacent end face of the first optical fiber so as to diffuse a dopant as well as a subsequent step of heating a portion including the fusion-spliced part between the first and the second optical fibers so as to diffuse the dopant contained therein.

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Allowable Subject Matter

9. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record does not disclose or suggest a method of connecting a first optical fiber having a first MFD and a second optical fiber having a second MFD smaller than the first MFD, wherein the MFD of the first optical fiber is enlarged by at least 1 mm by heating the portion including the adjacent end face thereof so as to diffuse the dopant during the heating step before fusion splicing. The prior art discloses enlarging the MFD of the fiber having the smaller MFD during a heating step before fusion splicing. The prior art also teaches enlarging the MFD of an optical fiber having a larger MFD during a heating step during or after fusion splicing. The prior art does not disclose the step of enlarging the MFD of the fiber having the larger MFD during a heating step before fusion splicing. Therefore, claim 3 would be allowable over the prior art of record.

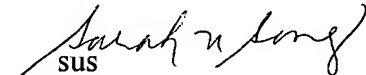
Conclusion

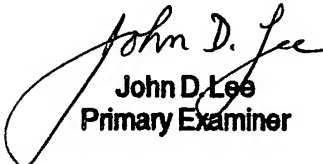
10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kashiwada discloses an enlarged MFD of both fibers at the fusion splice part. Noda et al. disclose diffusion of dopants in the optical fiber having the smaller MFD prior to fusion splicing. Ishiguro et al. disclose heating of optical fiber ends to be fusion spliced followed by a subsequent heating after the splice is formed to diffuse the dopants in the core of the fiber having a smaller MFD. Zell et al. disclose the occurrence of diffusion of dopants during the fusion splicing process.

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11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 703-306-5799. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at telephone number 703-308-0956 or to the technical support staff supervisor at telephone number 703-308-3072.


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March 5, 2003


John D. Lee
Primary Examiner